

INTERIM REPORT

University Heights Sites C and E
Environmental Evaluation

Prepared for

K. Hovnanian Companies of North Jersey, Inc.
10 Highway 35
Red Bank, New Jersey 07701

Prepared by

J M Sorge, Inc.
50 County Line Road
Somerville, New Jersey 08876

JMS Project No. 92050

July 1992

KHOV005709

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1.0 INTRODUCTION: PROGRAM OBJECTIVES

J M Sorge, Inc. (JMS) has been retained by K. Hovnanian Companies of North Jersey, Inc., to perform environmental evaluation and remediation activities at University Heights Development Sites C and E, located in Newark, New Jersey.

The objectives of the program are as follows:

- o Identify and remove all underground tanks and associated contaminated soil;
- o Conduct soil testing as necessary to determine quality of fill on site;
- o Supervise the removal of contaminated soils and conduct post-excavation confirmatory sampling; and,
- o Document the testing and cleanup conducted on site.

This report details the findings of the initial phase of these activities, including site investigation and subsurface evaluation, and contains proposed remedial activities regarding the underground storage tanks not associated with occupied dwellings or businesses at the time of this investigation. Table 1 lists all tanks which will be addressed during this portion of the program. As additional properties become accessible, they will be investigated and remedial plans developed accordingly.

1.1 APPROACH

Beginning on June 19, 1992 and continuing until July 10, 1992, JMS field personnel investigated the sites through a number of means in order to identify potential areas of environmental concern. Initially, JMS personnel visually inspected the site to determine the presence of stained soils, refuse, storage tanks or other potential causes of environmental degradation.

The visual inspection was followed by a subsurface evaluation, using electromagnetic remote sensing to identify potential underground storage tanks. This was followed by trenching, test pit installation and soil boring installation to evaluate tank location and condition, and to delineate any areas of contamination.

Due to the three (3) to four (4) week turnaround time for analytical results, this interim report will concentrate primarily on the tank investigation. When the analytical data becomes available, a final report will be submitted which more fully addresses the contaminated soils at the sites.

2.0 ENVIRONMENTAL SETTING

Sites C and E comprise seven (7) blocks in the University Heights section of the City of Newark. A site location map is provided as Figure 1. Site C consists of city tax blocks 403, 408, and 409; Site E consists of blocks 404, 405, 406, and 407. The predominant land use within the surrounding area is residential with less than 10 percent commercial use. The sites were formerly residential tracts, however a gradual decline in the area resulted in the ultimate demolition of most of the existing structures by the City of Newark. The demolition consisted of leveling and filling the condemned portions of the site. Apparently, the residential heating oil tanks were not removed from the site prior to demolition. Further, the quality of the fill material used to grade the site was not established at the time of placement.

2.1 REGIONAL GEOLOGY

The site lies within the Piedmont Physiographic Province. The Piedmont Province is underlain by Triassic and Jurassic rocks of the Newark Group. These rocks are classified into four (4) formations: The Stockton Formation, the Lockatong Formation, the Brunswick Formation, and the Watchung Basalts.

The Stockton Formation consists of grey feldspathic sandstone, arkosic conglomerates, and red shale, and is locally up to 2800 feet in thickness. The Lockatong Formation rests conformably on the Stockton and consists of grey and black siltstone. At its type section it is over 3300 feet thick. The Brunswick Formation is the youngest sedimentary member of the Newark Group. This formation is of Triassic to Early Jurassic age, and consists of interbedded brown, reddish-brown and grey shale; sandy shales; sandstone; and some conglomerates. The total thickness of the Brunswick Formation exceeds 6000 feet.

The Watchung Basalts are a series of three (3) extensive lava flows of the same age as the Brunswick Formation, and can be found interbedded with it.

2.2 REGIONAL HYDROGEOLOGY

The rocks of the Brunswick Formation are the main source of groundwater in Essex County. Water in these rocks occurs under confined and semi-confined conditions in the lowland areas of Newark where clay beds or till mantle the underlying rocks. Artesian pressure may be considerably reduced, or become unconfined due to the heavy pumping in the Newark area.

Groundwater exists in unconfined or confined conditions in Pleistocene glacial deposits above the bedrock. The unconfined groundwater occurs where sand and gravel deposits are not covered by clay, silt or till. These deposits are commonly less than 20 feet thick and do not yield large quantities of water. Confined and semi-confined groundwater occurs where sand and gravel deposits have been covered by clay, silt or till. These aquifers are found in buried bedrock valleys.

The shales and sandstones are generally capable of sustaining moderate to large yields. The best producing wells in the Brunswick Formation are commonly between depths of 300 to 400 feet. Drawdown due to pumping is greatest in the strike direction, (approximately North 30° East) and least in the direction perpendicular to strike. The average yield of large diameter production wells is in the range of 300 to 400 gallons per minute (gpm). Groundwater has been encountered on adjacent sites at depths of 13 to 20 feet. However, the presence of leaking water mains and buried basements has resulted in perched water zones at various intervals.

2.3 SITE SPECIFIC CONDITIONS

Sites C and E were extensively reworked during the process of demolition of the condemned housing and leveling of the area that occurred prior to this investigation. A soil boring program indicated that fill material consisting of building rubble, fill soils, and debris had been used during the post-demolition grading of the sites. Also, examination of the older maps from the City of Newark indicated that the area underwent considerable redevelopment during the period between 1910 and 1925. A review of aerial photos of the area from 1940, 1951, 1961, and 1974 indicates that the site was relatively stable until the period of 1961 thru 1974. Much of the demolition and grading of the site occurred at that time.

The soil boring and trenching investigation results indicate that native soils in the site area have been covered to a depth of approximately nine (9) feet. The material overlying the native soils is predominantly composed of reworked stony, sandy red soil derived from the Brunswick Formation. This is the material typically found in the block interiors. Bedrock is present at depths ranging from 2 to 15 feet across the site, trending deeper north of West Market Street toward Warren Street. The material that was used to fill the foundations of demolished buildings was composed of soil fill, building rubble and debris.

A great deal of trash has been dumped on the surface of the site over the years. This trash consists mainly of domestic garbage and automobile parts. Nothing of a serious hazardous nature (e. g. drums, industrial waste, etc.) was found on the sites.

3.0 SITE INVESTIGATION

Preliminary site inspections identified several areas of potential environmental concern on Sites C and E. A number of tanks were located during the preliminary investigation based on a surface inspection of the area. The presence of tank fill ports and vent pipes along the sidewalks were used to identify tank locations. Surface debris was taken as an indication of potential problems associated with the types of material used as fill. Several areas of concern were identified based on a review of aerial photographs and other conditions. The potential areas of concern included the following: surface staining and refuse piles in vacant lots on blocks 408 and 409, and the presence of auto repair shops and garages on blocks 404 and 407. The results of the previous investigation and cleanup completed on adjacent sites provided the basis for assessment of probable subsurface conditions based on the results of this field program. Experience from these previous programs also provided the basis for selection of investigative methods best suited for this area.

The following sections detail the investigative procedures used to evaluate each of these concerns, and the findings of this phase of the investigation.

3.1 BLOCK PERIMETER TRENCHING

In previous work in the adjacent development sites, most of the underground storage tanks (USTs) were located below or adjacent to sidewalks. Aerial photos confirm that much of the seven-block area was occupied by long narrow houses with limited access to the sides and backyards. This type of arrangement made it necessary to locate heating oil tanks in front of the houses to allow access for filling.

The most practical method for locating tanks was exploratory trenching. The trenches were installed using a rubber-tire backhoe along the former block perimeters. Since much of the property was unoccupied, perimeter trenching was almost complete. Figure 2 illustrates the completed trenching program.

3.2 BLOCK INTERIOR SURVEY

The interior portion of each block was investigated using a three-fold approach. First, an electromagnetic survey was conducted to locate tanks, drums or other large metallic objects. Electromagnetic "hot spots" were then investigated through the use of soil borings, test pits and trenches.

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In addition to the electromagnetic survey, a general site-wide soil boring and test pit grid survey was conducted. Due to obstructions such as buildings, fences and walls, the 50-foot grid survey had to be modified to assure good coverage of the site. Each soil boring and test pit was logged and the characteristics and composition of soils noted.

Cuttings from each boring were field screened using a portable photoionization organic vapor detector and selected samples were kept for laboratory analysis. Soil boring logs and test pit logs are included as Appendix A. The locations of the soil borings and test pits are indicated on Figure 2.

All of the electromagnetic "hot spots" observed in the block interiors were further evaluated during the subsequent drilling and test pit installation program. These were found to be caused by metallic debris such as old pipes, auto parts and metal scrap.

4.0 FINDINGS OF INVESTIGATIVE PHASE: AREAS OF ENVIRONMENTAL CONCERN

On the basis of the investigation described above, a number of areas of environmental concern have been identified at sites C and E. These include the locations of 25 improperly abandoned underground storage tanks and three (3) areas of contaminated soil. Each of these areas is illustrated on Figure 3. The following sections detail the specific findings of the trenching, soil boring, and test pit programs in terms of these areas of concern. Areas of concern have been broken down according to development site and tax block.

4.1 SITE C

BLOCK 403

The perimeter trenching operation identified three (3) underground storage tanks on Block 403. One tank (T403-1) was not exposed due to its position under the corner of a yard belonging to an occupied residence. The tank does not appear to be connected to said dwelling. It appears that it was left in place during the demolition of a neighboring house, whose lot was then acquired by the owner of the existing dwelling, who fenced in the area and turned it into a garden. The existence of the tank was determined when trenching activities outside the fenced area uncovered the feed and return lines and the vent pipe for the tank.

Tank T403-2 is a 550-gallon heating oil tank underneath the sidewalk in front of an abandoned dwelling. Tank T403-3 is a 500-gallon tank, possibly containing gasoline, found at one corner of an empty lot. This tank is believed to have been associated with a former residence at this now vacant lot.

An area of concern not connected with underground storage tanks was identified in a vacant lot located mid-block along Wilsey Street. The area exhibits extensive surface staining resulting from auto repair. There is a strong odor of motor oil and transmission fluid in this location, as well as numerous small auto parts scattered about the area. Trenching in this lot revealed that the staining does not extend greater than two (2) feet below the surface.

BLOCK 408

Four (4) USTs have been identified on block 408. Tank T408-1 is a 550-gallon heating oil tank located approximately mid-block along Newark Street. Tank T408-2 is a 1000-gallon kerosene tank located along Newark Street toward Warren Street. Tank T408-3 is a 550-gallon gasoline tank located in a vacant lot approximately 20 feet from T408-2, in an area of extensive PHC contaminated soils (described below). Tank T408-4 is located under new sidewalk at the corner of Norfolk and Warren Streets. Due to the busy nature of the intersection and the restricted access to the tank area, the tank was not uncovered, and it was impossible to determine the amount and type of product, if any, remaining inside. All of these tanks are believed to be associated with former residential structures.

An area of heavily contaminated soil has been identified in a vacant lot opening on Newark Street, in the vicinity of Tanks T408-2 and T408-3. Information obtained from local residents indicates that an oil distribution company employee was observed dumping heating oil in this lot on several occasions in the past.

Petroleum hydrocarbon contamination extends from the surface to bedrock at approximately nine (9) feet. The volume of affected soils is estimated at 1000 cubic yards. Soil contamination in this area does not appear to be related to the two (2) storage tanks encountered nearby.

In addition, there are several piles of refuse in the area which consist primarily of building debris, but which include empty 5-gallon buckets of machine lubricant and sealing compounds.

BLOCK 409

Three (3) heating oil tanks have been identified on this block. Tank T409-1 is a 1000-gallon UST located near the corner of Wilsey and Academy Streets. Tank T409-2 is a heating oil tank estimated at 1500 gallons capacity, located in front of an abandoned dwelling on Lot 30 along Newark Street. Tank T409-3 is a 275-gallon heating oil tank that was formerly located in the rear basement of an abandoned house on Lot 19 along Wilsey Street.

The house was demolished on or about July 10, 1992, with the tank still in the basement. The tank was subsequently excavated from the rubble and removed from the basement and placed a short distance from the former house, under the supervision of JMS personnel. The tank was observed to be empty of product and in good condition at the time of removal.

4.2 SITE E

BLOCK 404

Six (6) heating oil tanks were identified on this block. Four (4) are located in the basements of abandoned houses. Of these four, two (T404-2 and T404-3) have been determined to be 275-gallon oval tanks. Both of these were found along Academy Street. Due to the uncertain structural integrity of the dwellings in which they are located, and the lack of direct access from outside the dwellings, the other two (2) basement tanks (T404-5 and T404-6) were not directly investigated. However, it is reasonable to assume that they are also 275-gallon tanks similar to the others. Once the dwellings have been demolished these two (2) tanks will be addressed in detail.

The two (2) remaining tanks were uncovered during trenching operations along Academy Street and School Street. Tank T404-1 is a 550-gallon tank located beneath the sidewalk in front of an abandoned house along Academy Street. Tank T404-4 is a 1000-gallon tank in front of an empty lot across from the elementary school. Both tanks contain heating oil.

In addition, the garage of an abandoned house along Academy Street (Lot 20) appears to be an area of concern. A sign indicates that the garage used to be an auto repair shop. There is a great deal of refuse in the garage, and the floor appears to be heavily stained with motor oil. Due to restricted access, further investigation of this area will have to be delayed until the structure is demolished and the debris removed.

BLOCK 405

Five (5) USTs have been identified around the perimeter of this block. One, Tank T405-1, lies beneath the pavement in front of the recently demolished brick church along West Market Street. The tank is estimated to be of 1500 gallons capacity, and contains a small amount of No. 2 heating oil and water.

Due to the presence of underground utilities, including power lines and fiber-optic phone lines, the tank was not exposed.

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The remaining tanks, T405-2 through T405-5, were exposed by trenching activities along Academy Street. Tanks T405-2 and T405-3 are both 550-gallon heating oil tanks. Tank T405-3 appears to have leaked at some time in the past, but based on the trenching activities it appears that a limited area has been affected, and the volume of soils that will require removal is limited.

Tank T405-4 is a 1000-gallon heating oil tank. Stained soils near the fill port indicate that some spillage has occurred, but again the area affected appears to be limited.

Tank T405-5 is an odd-sized tank, estimated at 850 gallons capacity. There is no evidence of leakage around this tank, which contains heating oil.

BLOCK 406

Four (4) underground heating oil tanks have been identified along the perimeter of Block 406. Three (3) tanks, T406-1 through T406-3, were located along West Market Street in the immediate vicinity of buried utility lines, as described above. For this reason the tanks were not uncovered.

Tank 406-4 is a 550-gallon heating oil tank which was uncovered by trenching activities along Newark Street.

BLOCK 407

No underground heating oil tanks were encountered during trenching activities along Block 407. Two (2) tanks have been visually identified, but both are attached to occupied dwellings or places of business and, therefore, are not addressed in this report.

One area of concern not related to underground tanks has also been identified. An area of what appears to be pesticide and PHC contaminated soil has been discovered along Academy Street, extending from the garage on Lot 6 to the corner of Academy and Wilsey Streets. The contamination extends from the surface to bedrock at 8 feet. A strong pesticide-like odor was evident during excavation activities, and surface oil staining was evident in the area. The volume of affected soils is estimated at 300 cubic yards. The exact nature of the contaminants in this area will be verified by analysis.

5.0 PROPOSED REMEDIAL ACTIVITIES - TANKS

Remedial activities will be broken down into two (2) phases. The first will concentrate on the removal of the tanks described above. In most cases, the course of action will be as follows: the tank in question will be uncovered or otherwise made accessible by Milltown Drilling and Excavation (MDE). All product removal, tank entry, and cleaning will be performed by representatives of L&L Oil Service, Inc. (L&L). If necessary, MDE employees will create additional openings in the tank so that it may be completely emptied. Then L&L will enter and clean the tank so that it may be transported. A total of twenty-five (25) tanks will be addressed. Of these twenty (20) will be removed and five (5) will be abandoned in place. None of the tanks identified are regulated under the New Jersey Underground Storage Tank Act.

Most of the tanks in question are No. 2 heating oil tanks, and the necessary precautions are minimal. Two (2) tanks, however, appear to contain gasoline, and additional precautions will be necessary. In these cases, both JMS and MDE will be present with the necessary equipment and materials to secure the tank area in order to assure safe working conditions.

Once the tanks have been emptied and cleaned, they will be loaded onto a dump truck and taken to a scrap dealer for disposal.

Due to problems with access, JMS proposes to abandon four (4) tanks in place. The tanks to be abandoned in place are T405-1, T406-1, T406-2 and T406-3. These tanks are illustrated on Figure 2. Three (3) of these tanks are located along West Market Street, in the immediate vicinity of buried power and fiber-optic lines. In order to reduce the risk of property damage or injury to site personnel, the tanks will be left in place. After the tanks have been emptied and cleaned, they will be filled with concrete, and the excavation backfilled. If contaminated soils are encountered in the tank area, as much soil as possible will be removed without jeopardizing the integrity of the underground utility lines. One additional tank is located at the corner of Warren and Norfolk Streets. The tank is located under new sidewalk in close proximity to a busy intersection, with limited access to the tank location. The presence of underground utilities is suspected, and it would be prudent to minimize the disturbance of the area. Therefore it is proposed that this tank also be abandoned in place. The same procedure will be followed as described above.

6.0 ESTIMATED COSTS

TANK REMOVAL

Backhoe/Operator, 5 days @ \$600/day	\$	3,000
Dump truck/Operator, 5 days @ \$450/day		2,250
Vac. truck/Operator, 5 days @ \$1000/day		5,000
Waste product disposal, 7000 gal @ \$1.00/gal		7,000
Sampling/Supervision, 5 days @ \$500/day		2,500

TANK ABANDONMENT

Delivery of 20 yds. cement	1,200
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SAMPLE ANALYSIS

100-150 PHC @ \$75	7,500 - 11,250
25-40 BN+ @ \$400	10,000 - 16,000
25-40 VO+ @ \$325	8,125 - 13,000

DATA REVIEW/ANALYSIS/REPORTING

4,000

PROJECT MANAGEMENT

4,000

ESTIMATED TOTAL \$50,975 - 69,200

We anticipate being able to start field work within two (2) days of authorization. Sample analytical costs are based on standard turnaround time of three (3) to four (4) weeks. Field work should be completed in one week from startup. We anticipate completion of the final report within seven (7) weeks of the commencement of the tank removal program.

7.0 QUALITY ASSURANCE/QUALITY CONTROL

Throughout this investigation, strict measures were taken to assure the validity of all analytical data and the investigation findings. All samples were collected in accordance with JMS standard sampling procedures which have been approved by NJDEPE for numerous similar investigations. These procedures are outlined in Appendix B.

All analyses were performed by Envirotech Research, Inc. of Edison, New Jersey (NJDEPE certified laboratory No. 12543). A summary of analytical methodologies is provided in Appendix C. Complete laboratory quality assurance/quality control (QA/QC) documentation will be kept on file for review as necessary.

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8.0 CONCLUSION

The investigation detailed above has resulted in the identification of twenty-five (25) improperly-abandoned underground storage tanks and four (4) areas of concern involving contaminated soil not associated with USTs. At this time preparations are being made to commence with the tank removal program, and soil removal activities will be coordinated as analytical data becomes available. A complete report on the findings of this investigation will be prepared upon receipt of all analytical results.

AUTHORIZATION FOR PROFESSIONAL SERVICES

I accept the J M Sorge, Inc. (JMS) proposal of July 22, 1992, for K. HOVNANIAN COMPANIES OF NORTH JERSEY, INC., and agree to the terms and conditions provided in the JMS Schedule of Fees, attached. JMS is authorized to proceed with the project as of the authorization date indicated, with a maximum authorized billing amount of \$69,200. JMS will not exceed the amount authorized without prior approval.

JMS does not assume control of or responsibility for reporting to any Federal, State or local public agencies, any discharges or contamination at the site as required by law, or that may present a potential danger to public health, safety or the environment.

The owner agrees to indemnify JMS against any cost or liability which results or arises from damage or destruction of any subsurface utilities, piping systems, or other structures located on the owner's site or facility; which may occur during any subsurface investigation, cleanup conducted or related work conducted by JMS, unless the owner has previously notified JMS of the location of said utilities, piping systems or other structures.

JMS provides comprehensive General Liability Insurance coverage and Workmen's Compensation Insurance for JMS employees as required by New Jersey regulations.

The owner agrees to limit JMS liability to the Owner and to all other parties, due to JMS professional negligent acts, errors or omissions, such that the total aggregate liability of JMS to all parties shall not exceed JMS fee on this project.

Signed: K. HOVNANIAN COMPANIES OF NORTH JERSEY, INC.

By: _____

Title: _____

Authorization Date: _____

KHOV005723

K. HOVNANIAN DEVELOPMENT

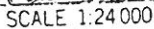
TABLE 1

TANK INVENTORY

TAX BLOCK	TANK NUMBER	CAPACITY	TYPE/AMOUNT OF PRODUCT*
403	T403-1	---	No. 2 heating oil /unknown
	T403-2	550	No. 2 heating oil /417 gal.
	T403-3	500	gasoline/500 gal.
404	T404-1	550	No. 2 heating oil /107 gal.
	T404-2	275	No. 2 heating oil /unknown
	T404-3	275	No. 2 heating oil /empty
	T404-4	1000	No. 2 heating oil /60 gal.
	T404-5	---	unknown
	T404-6	---	unknown
405	T405-1	1500	No. 2 heating oil/110 gal.
	T405-2	550	No. 2 heating oil/275 gal.
	T405-3	550	No. 2 heating oil/510 gal.
	T405-4	2000	unknown/430 gal.
	T405-5	1000	No. 2 heating oil/685 gal.
406	T406-1	---	unknown
	T406-2	550	No. 2 heating oil/50 gal.
	T406-3	550	No. 2 heating oil/22 gal.
	T406-4	550	No. 2 heating oil/520 gal.
407	NONE		
408	T408-1	500	No. 2 heating oil/500 gal.
	T408-2	1000	kerosene/90 gal.
	T408-3	550	gasoline/200 gal.
	T408-4	---	unknown
409	T409-1	1000	No. 2 heating oil/33 gal.
	T409-2	1200	No. 2 heating oil/670 gal.
	T409-3	275	No. 2 heating oil/empty

* all quantities approximate

KHOV005724



U.S.G.S. 7.5
MINUTE SERIES
ELIZABETH &
ORANGE
QUADRANGLE - NJ

CONTOUR INTERVAL 10 FEET

JM SORGE, INC.

HOVNANIAN SITES C & E

SITE LOCATION MAP

FIGURE 1

KHOV005725

FROM: MIKE K. VANSELOUS
K. HOVNANIAN CO.

SPEED LETTER®
TO: MIKE McCOWAN
J M SORGE INC

10 HIGHWAY 35
RED BANK, NJ 07701

SUBJECT: WASTE CLASSIFICATION SITE CITE 72050

MESSAGE
PLEASE REVIEW THE ATTACHED WASTE CLASSIFICATION REQUEST
FORM AND IF ACCEPTABLE, SIGN ON PAGE 4. THE REVIEW FOR
THE REQUEST IS \$350. IF IT IS MORE EXPEDIENT, J M SORGE
CAN PAY THE REVIEW. LET ME KNOW HOW YOU WISH TO
PROCEED. RETURN THE SIGNED FORM TO ME SO I CAN ATTACH THE
REQUIRED DATA AND SUBMIT IT. DATE 11/5/72 SIGNED Mike McCowan

REPLY
EXPEDIENT AS FAST AS POSSIBLE inform me of
COST AND I M give the OK/NAI
Sorge to supply check

KHOV005726

DATE SIGNED

Wilson Jones Carbonless MADE IN U.S.A.
44-902 Impulse © Wilson Jones, 1969

RECIPIENT: RETAIN WHITE COPY, RETURN PINK COPY. PLEASE TURN OVER FOR USE WITH WINDOW ENVELOPE.

New Jersey Department of Environmental Protection
Division of Hazardous Waste ManagementWASTE CLASSIFICATION REQUEST FORM

SUBMIT THIS FORM FOR ALL WASTE CLASSIFICATION REQUESTS. PLEASE READ THE ACCOMPANYING DIRECTIONS WHEN COMPLETING THIS FORM. MAIL COMPLETED FORMS TO THE ADDRESS ON THE LAST PAGE. FOR FURTHER INFORMATION CONTACT THE WASTE CLASSIFICATION PROGRAM AT (609) 292-8341.

(Please Type or Print Clearly)

SECTION 1: GENERAL INFORMATIONGENERATOR

1. Company Name K. Hovnanian Co. of North Jersey, Inc. 2. EPA ID Number NA
3. Street Address 10 Highway 35 4. Municipality Red Bank
(where waste was generated)
5. County Morrmouth 6. State NJ 7. Zip Code 07701 8. Contact Mark Vansalous
9. Phone Number (908) 747-7800
10. Regulatory Program: ECRA RCRA CERCLA UST NJ Spill Act County/Local Other N/A
11. Agency Contact N/A 12. Date of Classification Request: 11-5-92

SUBMITTER (Complete if someone is submitting this request on behalf of the generator or if the generator's mailing address is different from above--All correspondence will be addressed to this company if this section is completed.)

13. Company Name J M Sorge, Inc. 14. Mailing Address 50 County Line Road
15. Municipality Somerville 16. State NJ 17. Zip Code 08876
18. Contact Michael McGowan 19. Phone No. (908) 218-0066

KH0V005727

SECTION 2: WASTE TYPE INFORMATION

20. Waste Type: (Check the appropriate box for the type of waste to be classified. If the waste is not identified by any of the descriptions, check box "V". Required testing for the box checked is specified in Appendix 2.)

- | | | | |
|--|---|---|---|
| A. <input checked="" type="checkbox"/> soil contaminated with virgin petroleum fuel only | F. <input type="checkbox"/> spill cleanup waste (non-soil) | L. <input type="checkbox"/> sludge, N.O.S. | R. <input type="checkbox"/> household activities exempted waste |
| B. <input type="checkbox"/> soil contaminated with waste oil | G. <input type="checkbox"/> ash from fossil fuel combustion | M. <input type="checkbox"/> waste oil | S. <input type="checkbox"/> construction/demo debris |
| C. <input type="checkbox"/> soil contaminated with process waste | H. <input type="checkbox"/> ash from waste incineration | N. <input type="checkbox"/> grit and screenings | T. <input type="checkbox"/> products/raw mtl. |
| D. <input type="checkbox"/> soil contaminated virgin chemicals | I. <input type="checkbox"/> dredge spoils | O. <input type="checkbox"/> contaminated water | U. <input type="checkbox"/> process waste NOS |
| E. <input type="checkbox"/> soil, N.O.S.* | J. <input type="checkbox"/> sewage sludge | P. <input type="checkbox"/> municipal waste | V. <input type="checkbox"/> other waste |
| | K. <input type="checkbox"/> process waste sludge | Q. <input type="checkbox"/> empty containers | |
- *Not Otherwise Specified

21. Volume: ~3000 cubic yds. gals. (circle one), Disposed: once weekly monthly annually

WASTE CLASSIFICATION REQUEST FORM

22. Waste Description: Describe in detail the waste to be classified. [If the waste is contaminated soil, describe how the soil became contaminated (i.e. "The soil became contaminated with #2 fuel oil during the removal of a leaking underground storage tank."): If the waste is off-specification, contaminated, or otherwise unusable product, or empty containers, describe the product, the reason the material is being wasted, and (for empty containers) how the containers were emptied and/or cleaned. If the waste is process waste, or contains process waste, describe all of the processes that generate, or contribute to the waste. For all other wastes, describe the type of waste to be classified and how the waste was generated.]

Soil contaminated with virgin petroleum fuels: #2 fuel oil, gasoline. The soil was contaminated with fuel from underground storage tanks at numerous locations throughout a 7-block inner city redevelopment area in Newark, NJ. All tanks were of 275 to 1000-gallon capacity, and were associated with residential structures. The tanks and contaminated soil were removed as part of a site-wide cleanup performed in advance of residential redevelopment.

(Check box if additional sheets are attached) []

23. Other uses of hazardous materials on the same site: Indicate any other processes, including storage, which involve the use of hazardous materials which have taken place on the site. Of special importance are those compounds and wastes listed in N.J.A.C. 7:26-8.13, 8.14, 8.15, 8.16, and 8.20. If these materials could have contributed contamination to the waste to be classified, please list them here.

None known

(Check box if additional sheets are attached) []

SECTION 3: SAMPLING INFORMATION

NOTE: Sampling of excavated/stockpiled waste must be performed in accordance with the approach listed in Appendix 1 of this form. Failure to do so will result in the return of your request. Sampling of all other wastes (e.g. drummed waste, process wastes, in situ sampling of soil, etc.) must be approved, in writing, prior to sampling.

24. Was a site specific sampling plan pre-approved by the Waste Classification Program? (Y/N) y (If no, and you have not followed the sampling guidance in Appendix 1, your waste classification request may be returned due to inadequate sampling.)

If yes, the following items must be attached:

- i. the proposed sampling plan;
- ii. the Bureau's letter of approval;
- iii. an addendum describing any deviations from the approved plan which occurred during sampling.

KHOV005728

SEE ATTACHMENT ONE

page 2

WASTE CLASSIFICATION REQUEST FORM

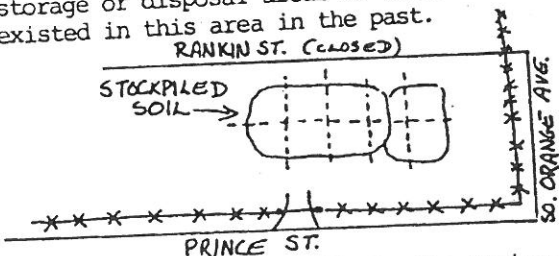
25. Sampling Methodology: (Check the appropriate box for the method of sampling used. If the method is not identified by any of the descriptions, check box "I." and explain methods used)

A. ☐ split spoon B. ☒ boring C. ☐ dredge D. ☐ wipe
 E. ☐ test pits F. ☐ grab G. ☐ liquids sampler H. ☐ chip
 I. ☐ other (explain)

26. Sampling approach: random positive bias (circle one)

27. Site Diagram: A site diagram (showing the location of the waste to be classified, sampling locations, the locations of any nearby process, storage, or waste disposal areas, and the present or past location of any nearby electrical transformers) is necessary for most classifications and should be submitted. The diagram may be drawn in the space below, or submitted as a separate attachment. If one is not supplied, and found to be necessary, the processing of your request will be suspended pending receipt of the diagram.

The stockpiled soil is located on a vacant city block. There are no nearby process, storage or disposal areas or transformer location, nor are any such areas known to have existed in this area in the past.



EACH GRID SPACE REPRESENTS
APPROXIMATELY 300 CUBIC YARDS
OF MATERIAL.

diagram drawn by M. McGowan

28. Compositing Scheme: Indicate the number of discrete samples comprising each laboratory sample composite.

Laboratory Sample (composite) I.D.#	No. of Discrete Samples Compositing to Make Lab Sample	Laboratory Sample (composite) I.D.#	No. of Discrete Samples Compositing to Make Lab Sample
73667	5	73674	5
73668	5	73675	5
73669 (75229)	5 (5)	73676	5
73670	5		
73671	5		
73672	5		
73673	5		

(Check box if additional sheets are attached) ☐

SECTION 4: ANALYTICAL RESULTS AND QUALITY ASSURANCE DELIVERABLES

The minimum testing and quality assurance requirements specified in Appendix 2 must be performed and the results/documentation submitted with this form. The Department reserves the right to require additional testing and information if deemed necessary for issuance of a letter of classification. For more information, see Appendix 2.

SEE ATTACHMENT 2

KHOV005729

New Jersey Department of Environmental Protection
Division of Hazardous Waste ManagementWASTE CLASSIFICATION REQUEST FORM

29. GENERATOR CERTIFICATION: I certify that I have personally examined and am familiar with the information submitted in this form and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that omission of information, or submission of false information could render the Department's opinion on this waste null and void, and that illegal disposal of nonhazardous and/or hazardous waste could subject me and my company to both civil and criminal penalties. I am also aware that the Department's opinion on the hazardous/nonhazardous status of the material/waste represented by the information presented on this form, in no way relieves my responsibility to properly determine whether the waste generated is a hazardous waste in accordance with the provisions of N.J.A.C. 7:26-1,4,7-12 et seq.

I am MARK TODD VANSEBUS and am employed by K. HOFFMAN COMPANIES
(print first, middle, last name) (company name)

in the capacity of ASSISTANT PROJECT DIRECTOR on this day 11-9-, 1992.
(job title or position) (month, day, year)

Mark Todd Vansebus (signature)

Waste Composition Certification

NOTE: Generators who, through knowledge of the waste to be classified, can certify that these compounds are not present in the waste may sign this certification in lieu of certain testing. Please check the appropriate box(es) and sign the certification. Required testing is specified in Appendix 2.

I hereby certify, to the best of my knowledge, and after diligent searching and examination of all pertinent records, including personal interviews with all persons who may have knowledge on the subject, that none of the following chemicals for which the boxes are checked ever have been used, stored, spilled, or disposed in such a way that they may potentially be present in the waste to be classified. (Check the box(es) for those chemicals which you are certifying are not present in the waste.)

Wastes listed in N.J.A.C. 7:26-8.13, 8.14, 8.15, or 8.20 ☒]

Toxicity Characteristic pesticides and herbicides ☐ [x]

Toxicity Characteristic volatile and semivolatile compounds ☐ [x]

Sulfide and cyanide bearing compounds (including naturally occurring) ☐ [x]

Polychlorinated biphenyls (PCBs) ☐ []

I am _____ and am employed by _____
(print first, middle, last name) (company name)

in the capacity of _____ on this day _____, 19____.
(job title or position) (month, day, year)

I am certifying based upon knowledge/information that covers the time period from _____ to _____
(date) (signature) (date)

COMPLETED FORMS AND COPIES OF ORIGINAL LABORATORY REPORTS FOR ALL REQUIRED ANALYTICAL WORK AND MUST BE MAILED TO: WASTE CLASSIFICATION SECTION, BUREAU OF HAZARDOUS WASTE REGULATION AND CLASSIFICATION, NJDEP - DHWM, CNO28 401 EAST STATE STREET, TRENTON, NJ 08625. INCOMPLETE FORMS WILL BE RETURNED, RESULTING IN DELAYS. THE DEPARTMENT RESERVES THE RIGHT TO REQUEST ADDITIONAL INFORMATION IF DEEMED NECESSARY.

KH0V005730

ATTACHMENT 1
RESPONSE TO ITEM 24

KHOV005731



JM Sorge, Inc.

Handwritten signature

50 County Line Road, Somerville, NJ 08876 • (201) 218-0066
FAX (201) 218-9185

88053

May 2, 1990

Mr. Charles D'Amico
NJ Department of Environmental Protection
Division of Hazardous Waste Management
Bureau of Hazardous Waste Regulation and Classification
CN 028
Trenton, NJ 08625-0028

Re: Waste Soil Classification Sampling Plan
K. Hovnanian Co.; University Heights Project
Newark, NJ
JMS Project # 88053

Dear Mr. D'Amico:

The purpose of this letter is to propose a modified waste characterization sampling plan for petroleum contaminated soils excavated at the University Heights redevelopment project area in Newark, New Jersey. Our original waste classification request was submitted on March 26, 1990. That request included analytical results for four (4) composite samples of the waste soil. The total volume of waste soil involved is approximately 15,500 cubic yards.

The waste soil was the result of leakage from a group of underground storage tanks discovered during the early construction/site preparation phase of the project. The project site is located in a seriously blighted portion of the Central Ward of Newark. This part of the city sustained extensive destruction during the 1968 riots and never recovered. Most of the buildings damaged during the riots were leveled by the city. Underground storage tanks associated with the buildings were generally ignored during this site clearing and leveling activity. Now, as redevelopment has begun these tanks and the contaminated soil associated with them are being removed voluntarily by the K. Hovnanian Company, the project developer.

Most of the tanks discovered are in the 500 to 1,000-gallon capacity range and were used to store heating oil. However,, the tanks that caused the 15,500 cubic yards of contaminated soil currently under evaluation are believed to have held gasoline.

KHOV005732

Mr. Charles D'Amico
May 2, 1990
Page Two

The tanks were very old (greater than 50 years) based on their unusual design, construction and placement. There was no surficial evidence of the presence of the tanks, such as fill ports or vents. Because the buildings had been removed long ago and the city records contained little pertinent information, it was impossible to determine the tanks original purposes. The tanks contained mostly water and what appeared to be weathered gasoline. The presence of gasoline constituents in the contaminated soil leads us to conclude that the material stored was gasoline.

Since the soil was originating from Essex County, no in-state disposal site was available, and preparations were made to dispose of the soil out-of-state. However, the expense of out-of-state disposal made this infeasible. More recently, the Hackensack Meadowlands Development Commission has made us aware that it may be willing to accept this material for use as cover, providing that it is classified as ID-27 and approved for use as cover by NJDEP. The analytical results submitted previously were for samples collected during the early part of excavation. They came from some of the most heavily contaminated soil encountered in the area immediately surrounding the tanks. The samples were originally intended for approval for out-of-state disposal.

Based on our telephone conversation of May 1, 1990, we propose to collect additional samples to help the Department make its determination as to the classification of the waste soil. The soil is currently stockpiled in one (1) area on site. The stockpile covers an area of approximately 40,000 square feet. A grid will be superimposed over the stockpile which will divide it into 30 squares of approximately 1,300 square feet surface area. Five (5) discrete samples will be collected from various depths in each square. These discrete samples will be composited into a single sample for each square. This will result in the collection of 30 separate waste characterization samples, each representing approximately 500 cubic yards of soil.

KHOV005733

Mr. Charles D'Amico
May 2, 1990
Page Three

Each sample will be analyzed for the following parameters:

EP-Toxicity Metals (Arsenic, Barium, Cadmium, Chromium,
Lead, Mercury, Selenium, Silver)

Sulfide Reactivity

Cyanide Reactivity

Total Petroleum Hydrocarbons

pH

Percent Solids

Corrosivity

Ignitability

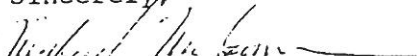
Polychlorinated Biphenyls (PCBs)

The samples will be collected in accordance with NJDEP approved procedures as outlined in the attached methodology summary. All analytical work will be performed by an NJDEP-certified analytical laboratory. Chain-of-custody documentation and all appropriate quality assurance/quality control documentation will be supplied.

Results for these samples will be tabulated and supplied to the Department as a supplement to the original classification request.

A check in the amount of \$200.00 has been enclosed to cover the Sampling Plan review fee. If you have any questions regarding this plan, please call me at your convenience.

Sincerely,


Michael McGowan
Senior Geologist

MM:cp

Enclosure

cc: Mr. Glenn Ward, K. Hovnanian Co.

KHOV005734

WASTE CLASSIFICATION SOIL SAMPLING PROCEDURES

The following information details the Waste Classification Soil Sample Collection Procedures. These procedures represent methods utilized to ensure the validity of soil samples collected at the site.

The composite soil samples will be collected in the following manner:

Equipment:

- o Two, 4-inch O.D., stainless steel hand auger;
- o Two, stainless steel hand trowels;
- o 5-quart stainless steel mixing bowl;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (1 gallon);
- o Acetone (1 gallon);
- o plastic spray bottle applicators;
- o Wide-mouth, amber glass jars with teflon-lined screw caps;
- o Sample cooler/ice packs

Procedure:

- 1) One (1) composite soil sample will be collected each 100 cubic yards of excavation spoils. Each composite sample will be made up of four (4) individual soil samples. The soil samples will be collected from different boring depths to attain the most accurate representation of the waste spoils.
- 2) The auger will be advanced to the desired sampling depths, and the auger controls will be placed into a stainless steel mixing bowl. Following the collection of four (4) soil samples, the contents within the bowl will be thoroughly emptied on a bench-kote paper and divided into quarters. Only one quarter will be placed into a sampling jar.

KHOV005735

- 3) Upon completion of the sampling for that particular drum, the auger will be scrubbed clean, using alconox and distilled water mixture. After scrubbing, the auger will be rinsed with a alconox/distilled water mixture and then rinsed again with distilled water. The auger will be rinsed with acetone to remove any residual materials, allowed to air dry, then given a final rinse of distilled water. The hand trowel and mixing bowl will also be decontaminated following the same procedures between sample collection.
- 4) The soil sample for laboratory analyses will be placed into a wide-mouth amber jar with a teflon-lined screw cap. A sample label will be prepared showing the sample number, date, and analysis to be conducted. A Chain-of-Custody Control form will also be prepared.
- 5) The soil sample bottles will be placed into a storage cooler at 4°C (ice packs) for transport to the J. I. Sarge, Inc. offices located in Somerville, NJ. The samples will be refrigerated until transferred to the laboratory for analysis.

KHOV005736

J.M. SORGE, INC.
50 COUNTY LINE ROAD
SOMERVILLE, NJ 08876

2276

55.110
212

5-2-1970

\$ 200.00

DOLLARS

PAY TO THE ORDER OF TREASURER, STATE OF NEW JERSEY

Two hundred and no/100

MIDLANTIC

Midlantic National Bank
Somerville Circle Office, Rutherford, NJ 08859

VA Srg

FOR WASTE CORR. SAMPLES

FOR WASTE CORR. SAMPLES 1:0212000121: 001040223811

KHOV005737

Let's protect our earth



88053

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

CN 028
Trenton, N.J. 08625-0028
(609) 633-1408
Fax # (609) 633-1454

MAY 10 1990

Mr. Michael McGowen
Senior Geologist
J.M. Sorge, Inc.
50 County Line Road
Somerville, N.J. 08876

Re: Waste Soil Classification Sampling Plan
K. Hovnanian Co., University Heights Project
Newark, New Jersey

Dear Mr. McGowen:

In response to your letter of May 2, 1990 to Mr. Charles D'Amico, requesting an approval of your sampling plan, please be advised that the plan is acceptable with regard to the number of samples proposed, thirty (30), with each sample representing approximately 500 cubic yards of soil.

Additional parameters for E.P. Toxicity herbicides and pesticides must be performed on each sample, or a signed statement that none of the aforementioned herbicides and pesticides were ever used, spilled or otherwise discharged at the site must be submitted to the Bureau.

According to Bureau policy, if total petroleum hydrocarbons exceed 1000 ppm for any sample, the Bureau reserves the right to request that sample to be analyzed for a complete EPA Priority Pollutant Scan with the exception of those parameters previously analyzed. Lastly, a multiplication factor of 5 will be applied to all results, since 1/5 of the required number of samples are to be analyzed. Should results exceed action levels or legal limits, additional sampling may be required.

Should you have any questions or require additional information please contact me at (609) 292-8341.

Very truly yours,

David Schrier, Principal
Environmental Specialist
Bureau of Hazardous Waste
Regulation and Classification

KHOV005738

PR14:nb



SAMPLING PLAN ADDENDUM

The original Sampling Plan, dated May 2, 1990, and approved on May 10, 1990, was employed again in the evaluation of the stockpiled soil for which we are currently seeking classification. However, we have made the following variations in the plan:

1. Each composite sample is representative of approximately 300 cubic yards of material as opposed to 500 cubic yards specified in the original plan;
2. The suite of analytical parameters for which each sample was analyzed was expanded to include the complete TCLP organics.

These changes served to give a more accurate assessment of the material and provide a more complete analysis consistent with current regulatory requirements.

KHOV005739

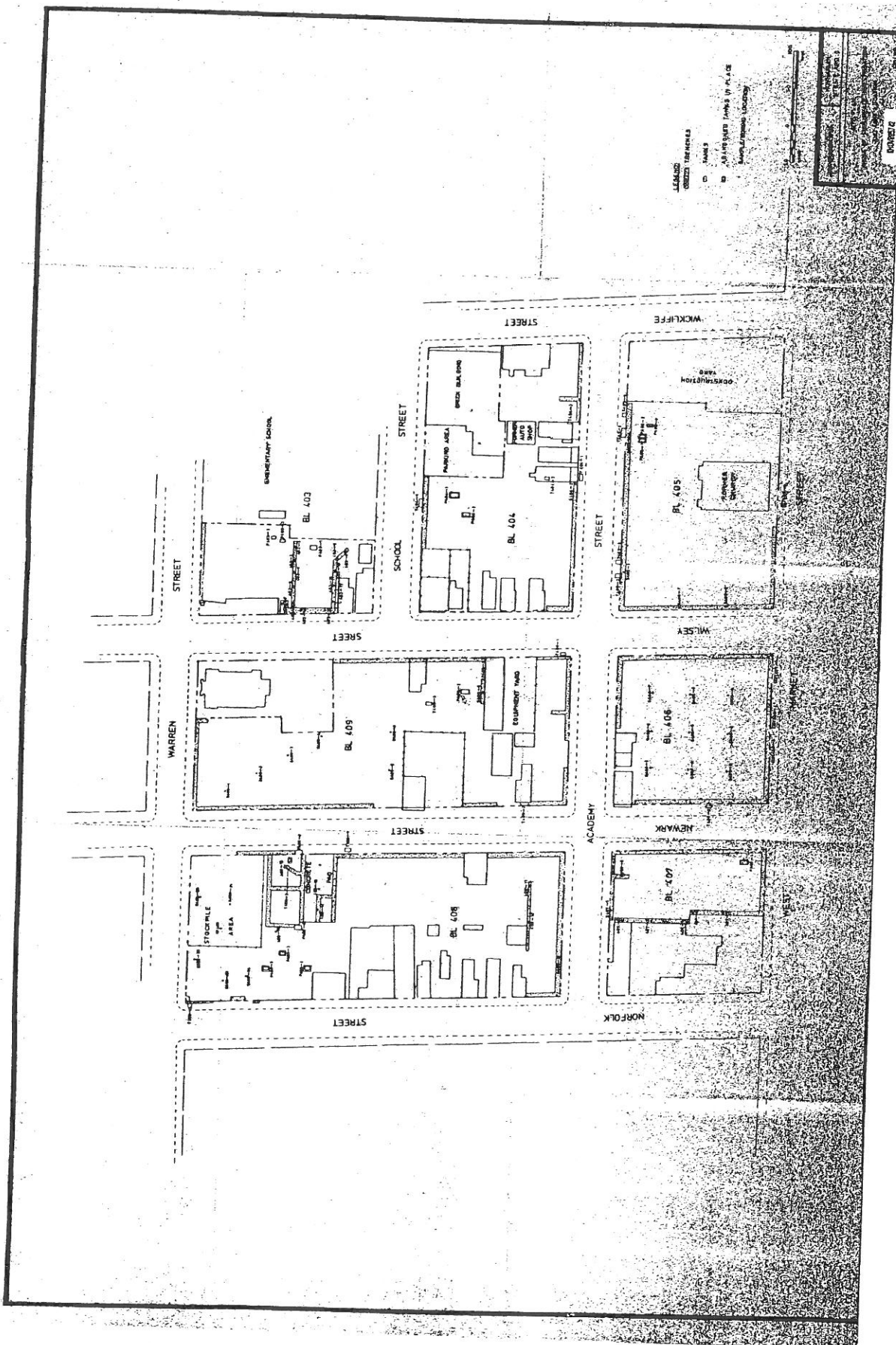
ATTACHMENT 2
LABORATORY ANALYTICAL REPORT

KHOV005740

Note:

Sample SS-3 contained lead at a concentration slightly exceeding the regulatory level. In order to verify this unexpected result, a second composite sample, designated SR-3, was collected from the original SS-3 area. Sample SR-3 contained no detectable quantities of leachable lead. The laboratory analytical report for Sample SR-3 follows that of the original samples.

KHOV005741



APPENDIX A
BORING AND TEST PIT LOGS

KHOV005743



BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: P403-2		LOCATION: BL. 403			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/7/92 FINISH: SAME		TOTAL DEPTH: 7	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	S403-1			2		Reddish black loamy soil with cobbles and shale fragments. Weathered red shale at bottom.
				4		
				6		<hr/> Bottom of Pit
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005744



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P403-3		LOCATION: Bl. 403	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: test pit		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: T. BER	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/7/92 FINISH: SAME	
		ELEVATION:	
		TOTAL DEPTH: 7	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	S403-1			2		Reddish black loam. Weathered red shale at bottom.
				4		
				6		Bottom of Pit
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005745



BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: P404-1

LOCATION: Bl. 404

JOB NUMBER: 02050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: test pit

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: T. BER

HAMMER WEIGHT:

DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 6/25/92 FINISH: SAME

TOTAL DEPTH: 8

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Grey/black loamy soil and construction debris.
				4		
				6		
				8		
				10		
				12		
				14		
				16		
				18		Bottom of Pit
				20		
				22		
				24		
				26		
				28		
				30		


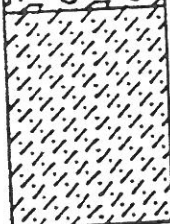
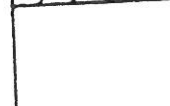
KHOV005746



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P404-2	LOCATION: Bl. 404	
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: test pit	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: T. BER	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 8/28/92 FINISH: SAME	TOTAL DEPTH: 9

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Grey/black loamy soil and construction debris.
				4		Red/brown silty clay.
				6		
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005747



BORING LOG

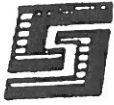
J M SORGE INC

(Page 1 of 1)

BORING NO.: P405-1	LOCATION: Bl. 405	
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: test pit	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: T. BER	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 8/24/92 FINISH: SAME	TOTAL DEPTH: 8

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Red/brown loamy soil and construction debris.
				4		
				6		Bottom of Pit
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005748



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P405-2		LOCATION: BL. 405			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 8/24/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Red/brown loamy soil and construction debris.
				4		
				6		
				8		Bottom of Pit
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005749



BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: P405-3		LOCATION: Bl. 405			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 8/24/92 FINISH: SAME		TOTAL DEPTH: 6	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Red/brown loamy soil and construction debris.
				4		
				6		
				8		
				10		
				12		
				14		Bottom of Pit
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

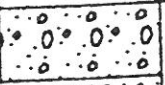


KHOV005750



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-1	LOCATION: Bl. 408	
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: SOLID STEM AUGER	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: ANDREW BER	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 7/9/92 FINISH: SAME	TOTAL DEPTH: 8

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B408-1			2		Silty loam with construction debris
				4		Yellowish to reddish brown silty sand with fine gravel
				6		End of Boring.
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005751



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-2		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: ANDREW BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/9/92 FINISH: SAME		TOTAL DEPTH: 10.5	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Reddish-brown silty loam with construction debris.
				4		
				6		Reddish-brown silty sand with gravel and construction debris.
				8		
				10		Reddish-brown clayey silt with shale fragments and rubble.
				12		
	B408-2			14		Bottom of boring.
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005752



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-3

LOCATION: Bl. 408

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: ANDREW BER

HAMMER WEIGHT:

DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/9/92 FINISH: SAME

TOTAL DEPTH: 8.5

PROFILE	SAMPLES		DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC. BLOWS/8 IN			
			2		Silty loam with construction debris.
			4		Silty, clayey yellow-brown sand with fine gravel.
			6		Dark grey/brown silty sand with fine gravel.
			8		End of Boring.
			10		
			12		
			14		
			16		
			18		
			20		
			22		
			24		
			26		
			28		
			30		

KHOV005753

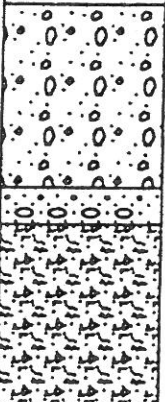


BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: B408-4		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: ANDREW BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/9/92 FINISH: SAME		TOTAL DEPTH: 11.0	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Dark grey silty loam with construction debris.
				4		
				6		Brown/yellow-brown silty, gravelly sand.
				8		
				10		Reddish-brown silty sand with minor gravel.
				12		End of Boring.
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

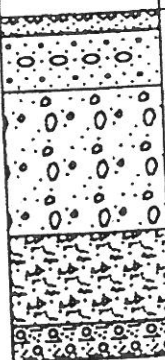
KHOV005754



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-5	LOCATION: Bl. 408	
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: SOLID STEM AUGER	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: ANDREW BER	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 7/9/92 FINISH: SAME	TOTAL DEPTH: 9.50

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	B408-5			2		Dark grey silty sand.
				4		Grey/brown silty sand with construction debris.
				6		Grey/brown silty, gravelly sand with construction debris.
				8		Yellow/brown silty, clayey sand with fine gravel.
				10		Dark brown silty sand with fine gravel.
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		
						End of Boring.

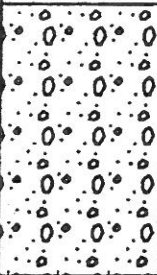
KHOV005755



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-8		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: ANDREW BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/9/92 FINISH: SAME		TOTAL DEPTH: 7.5	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Grey-brown silty sand with construction debris.
				4		
				6		
				8		
	B408-8			10		End of Boring.
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

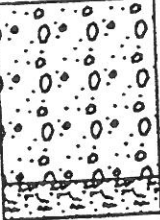
KHOV005756



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-7		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: ANDREW BER	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/9/92	FINISH: SAME
		ELEVATION:	
		TOTAL DEPTH: 8.0	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B408-7			2		Grey-brown silty loam with gravel and construction debris.
				4		
				6		Reddish-brown silty, clayey sand with minor gravel.
				8		
				10		End of Boring.
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005757



BORING LOG

J M SORGE INC

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BORING NO.: B408-8		LOCATION: Bl. 408					
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN					
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION							
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO					
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON					
SAMPLER TYPE:		INSPECTOR: ANDREW BER					
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:			
STROKE LENGTH:		START: 7/9/92		FINISH: SAME		TOTAL DEPTH: 10.5	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	B408-8			2		Yellowish-brown loam with construction debris.
				4		
				6		Grey-brown to reddish-brown silty, clayey sand with const. debris.
				8		
				10		
				12		End of Boring.
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		




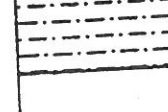

KHOV005758



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-9	LOCATION: Bl. 408	
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILL TOWN DRILLING AND EXCAVATION		
DRILLING METHOD: SOLID STEM AUGER	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: ANDREW BER	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 7/10/92 FINISH: SAME	TOTAL DEPTH: 11.0

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	B408-9			2		Black coal ash and loam.
				4		Red/brown gravelly silt.
				6		
				8		Soft reddish shale.
				10		
				12		End of Boring.
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005759



BORING LOG

J M SORGE INC

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BORING NO.: P407-1

LOCATION: Bl. 403

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: test pit

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: T. BER

HAMMER WEIGHT:

DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/9/92

FINISH: SAME

TOTAL DEPTH: 10

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Dark yellow/light brown sandy loam.
				4		Light brown silty loam.
				6		Weathered red shale with sandy silt.
				8		
				10		
				12		Bottom of Pit
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		


KHOV005760



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P408-1		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/6/92		FINISH: SAME	
				TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Fill material. Clayey unsorted sand and debris.
				4		
				6		
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005761



BORING LOG

J M SORGE INC

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BORING NO.: P408-2		LOCATION: BL. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILL TOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/8/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Fill material. Clayey unsorted sand and debris.
				4		
				6		
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		


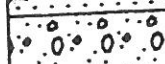

KHOV005762



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P408-3		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: test pit		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: T. BER	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/6/92	FINISH: SAME
		ELEVATION:	
		TOTAL DEPTH: 9	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Fill material. Clayey unsorted sand and debris.
				4		
				6		Coal ash and burnt wood.
				8		Red/brown silty clay with cobbles, gravel, and sand.
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005763



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P408-4		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/8/92 FINISH: SAME		TOTAL DEPTH: 10	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Fill material. Clayey unsorted sand and debris.
				4		Red/brown silty sand with cobbles, and pebbles.
				6		
				8		
				10		
				12		Bottom of Pit
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

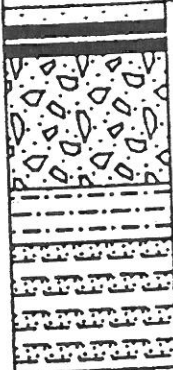
KHOV005764



BORING LOG

J M SORGE INC
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BORING NO.: P408-5		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: test pit		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: T. BER	
HAMMER WEIGHT:		ELEVATION:	
STROKE LENGTH:		TOTAL DEPTH: 10	
		DRILLING DATES	
		START: 7/8/92 FINISH: SAME	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	S408-15			2		Fill material. Coal ash and loamy soil, layered with remnant asphalt paving.
				4		Fill material. Clayey unsorted sand and debris.
				6		Bluish, stained clay. Strong PHC odor.
				8		
				10		Weathered red/brown shale and sandy silt.
				12		
				14		Bottom of Pit
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

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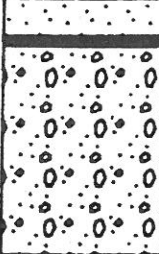


BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: P408-8		LOCATION: BL. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/8/92 FINISH: SAME		TOTAL DEPTH: 7	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Fill material. Coal ash and loamy soil, layered with-remnant asphalt paving.
				4		
				6		Fill material. Clayey unsorted sand and debris.
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005766



BORING LOG

J M SORGE INC
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BORING NO.: B408-11	LOCATION: Bl. 408	
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: SOLID STEM AUGER	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 6/24/92 FINISH: SAME	TOTAL DEPTH: 23

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	408-11A			2		Black/grey clayey fine sand.
				4		
	408-11B			6		Red/brown fine sandy clay with fine gravel. Water at 12-15 ft.
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				28		
				28		
				30		End of Boring

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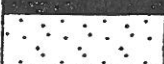
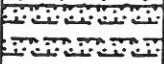
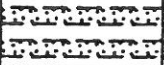


BORING LOG

J M SORGE INC

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BORING NO.: B408-12		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 8/24/92 FINISH: SAME		TOTAL DEPTH: 5.5	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	408-12A			2		Concrete, asphalt paving.
				4		Unsorted sand with gravel and debris.
				6		Reddish/brown sandy clay.
	408-12B			8		End of Boring
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

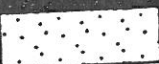
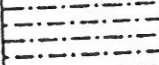
KHOV005768



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-13		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 8/24/92 FINISH: SAME	
		ELEVATION:	
		TOTAL DEPTH: 5.5	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	408-13A			2		Concrete.
				4		Black/brown coarse sand and gravel.
	408-13B			6		Dark brown/red clay with some sand.
				8		End of Boring
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005769



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-14		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 8/24/92 FINISH: SAME		TOTAL DEPTH: 5.5	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Concrete.
	408-14A			4		Red/brown sandy clay.
	408-14B			6		End of Boring
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005770



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-20		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPER: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		ELEVATION:	
STROKE LENGTH:		TOTAL DEPTH: 11	
		DRILLING DATES	
		START: 7/10/92 FINISH: SAME	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Brown gravelly loam.
				4		
				6		
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		End of Boring
				26		
				28		
				28		
				30		

KHOV005771



BORING LOG

J M SORGE INC

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BORING NO.: B408-21	LOCATION: Bl. 408	
JOB NUMBER: 92050	PROJECT: K. HOVNIANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: SOLID STEM AUGER	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 7/10/92 FINISH: SAME	TOTAL DEPTH: 11

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	B408-21			2		Dark brown gravelly loam.
				4		
				6		Black/tan very fine sandy clay.
				8		
				10		Red/brown clayey silt with shale fragments and gravel.
				12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005772



BORING LOG

J M SORGE INC
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BORING NO.: B408-22		LOCATION: BL. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/10/92	FINISH: SAME
		ELEVATION:	
		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Dark brown gravelly loam and coal ash with construction debris.
				4		
				6		
				8		
				10		
	B408-22			12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

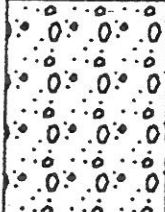
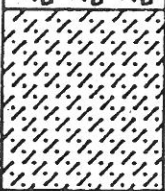
KHOV005773



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-23		LOCATION: BL. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNIANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Red/brown gravelly loam with construction debris.
				4		
				6		
				8		Black/tan fine sandy clay.
				10		
	B408-23			12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

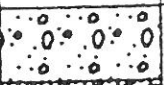

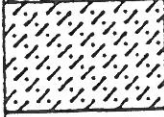
KHOV005774



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-24		LOCATION: BL. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Brown loam with coal ash and construction debris.
				4		Red/brown gravelly silt.
				8		Light-brown fine sandy, silty clay.
				10		
				12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

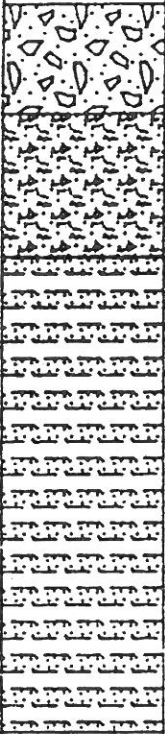

KHOV005775



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B409-1		LOCATION: Bl. 409			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION: -	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	B409-1			2		Brown silty loam with construction debris.
				4		Dark brown/black clayey silt with pebbles.
				6		
				8		Red/brown clayey silt with shale fragments. Water at 10 ft.
				10	▽	
				12		
				14		
				16		
				18		
				20		
				22		End of Boring
				24		
				26		
				28		
				30		

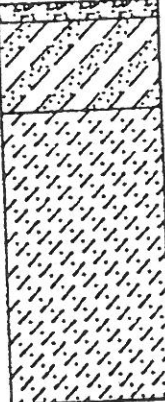
KHOV005776



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B409-2		LOCATION: Bl. 409	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME	
		ELEVATION:	
		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B409-2			2		Red/brown loam with pebbles.
						Grey/tan clay.
				4		Slightly clayey red/brown silt with minor coarse sand and fine gravel.
				6		
				8		
				10		
				12		
				14		End of Boring
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005777




BORING LOG

J M SORGE INC

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BORING NO.: B409-3		LOCATION: Bl. 409			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	B409-3			2		Grey/black loam with construction debris.
				4		
				6		Grey/tan clay.
				8		Red/brown clayey silt with shale fragments.
				10		
				12		
				14		End of Boring
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005778

KHOV005778



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B409-4		LOCATION: Bl. 409			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11	

PROFILE	SAMPLES		DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN		
.....	B409-4				Red/brown silty loam with minor shale fragments.
.....					
.....					
.....					
.....					
.....					
.....					
.....					
.....					
.....					
					End of Boring



KHOV005779



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B409-5		LOCATION: Bl. 409			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B409-5			2		Red-brown loam with gravel.
				4		Grey/black clayey silt with some gravel.
				6		Tan/black fine sandy clay, damp. Some gravel.
				8		Red/brown clayey, sandy silt.
				10		
	B409-5			12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005780



BORING LOG

J M SORGE INC
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BORING NO.: B409-8

LOCATION: Bl. 409

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: A. HEFFRON

HAMMER WEIGHT:


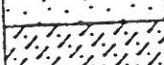
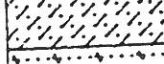
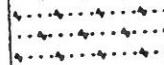
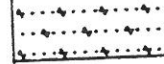
DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/10/92 FINISH: SAME

TOTAL DEPTH: 11

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Brown silty loam with gravel and pebbles.
				4		Red/brown silt with gravel and pebbles.
				6		Black/tan to tan/black silty clay.
				8		Red/brown clayey silt with shale fragments.
				10		
	B409-8			12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005781



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P408-1		LOCATION: Bl. 403			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/ft IN			
				2		Clayey, silty loam with construction debris.
				4		
				6		
				8		
				10		
				12		
				14		
				16		
				18		Bottom of Pit
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005782



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P409-2		LOCATION: Bl. 403			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Clayey, silty loam with construction debris. Water at bottom of pit.
				4		
				6		
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005783

APPENDIX B
STANDARD SAMPLING PROCEDURES

KHOV005784

TRUCK MOUNTED AUGER SAMPLING PROCEDURES

Soil borings were advanced using a truck mounted, solid stem auger rig. Soil samples were collected by standard hand auger techniques in the following manner:

Equipment:

- o Truck mounted solid stem auger rig;
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two (2) plastic spray applicators;
- o Wide-mouth, amber glass jars and septum vials with teflon-lined screw caps;
- o Sample cooler/ice packs;
- o Bentonite pellets.

Procedure:

- 1) A truck-mounted, solid stem auger rig was used to advance the boring to a point above the desired sampling depth;
- 2) The soil materials encountered during the boring were logged by the geologist as they were brought to the surface;
- 3) The auger was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger was scrubbed clean using analconox and distilled water mixture. After scrubbing, the auger was rinsed with thealconox/water mixture and then rinsed again with distilled water. The auger was rinsed with acetone to remove any residual materials then air dried, and given a final rinse with distilled water.

KHOV005785

TRAILER-MOUNTED AUGER SAMPLING PROCEDURES

Soil borings were made using a trailer-mounted, solid stem auger rig. Soil samples were collected by standard hand auger techniques in the following manner.

Equipment:

- o Trailer mounted solid stem auger rig;
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon-lined screw caps;
- o Sample cooler/ice packs;
- o Bentonite pellets.

Procedure:

- 1) A trailer-mounted solid stem auger rig will be used to advance the boring to a point above the desired sampling depth;
- 2) The soil materials encountered during the boring will be logged by the geologist as they are brought to the surface;
- 3) The auger will be placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger will be scrubbed clean using analconox and distilled water mixture. After scrubbing, the auger will be rinsed with thealconox/water mixture and then rinsed again with distilled water. The auger will be rinsed with acetone to remove any residual materials, then air dried, then given a final rinse with distilled water.
- 4) A clean auger (the second) will be used to collect the soil from the sample zone. The auger will be advanced one foot and brought to the surface.

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- 5) The soil will be removed from the auger. Only the interior portion (3 to 4 inches) of the soil will be collected for later analysis. The top and the bottom of the sample will be discarded. A portion of the sample will be set aside for field analysis.
- 6) The soil sample for laboratory analyses will be placed in a wide-mouth amber jar or septum vials with a teflon-lined screw cap. A sample label will be prepared showing the sample number, depth of collection, date, and analysis to be conducted. A Chain-Of-Custody control form will also be prepared.
- 7) The soil sample bottles will be placed in a storage cooler at 4° C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples will be refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis will be decontaminated using the procedure detailed in Item 3 above.
- 9) At the completion of the boring, the bore hole will be backfilled with bentonite.

KHOV005787

GROUNDWATER SAMPLING COLLECTION

Water samples were collected from the monitoring wells in the following manner:

Equipment:

- o Three (3), 1 1/2-inch O.D., stainless steel bailer with stainless steel leader;
- o Cotton rope;
- o Distilled water (2 gallons);
- o Acetone (1 gallon);
- o Two (2) plastic spray applicators;
- o Smallneck, amber glass jars with teflon-lined screw caps, and septum vials;
- o Sterilized surgical gloves (disposable); and,
- o Sample cooler/ice packs.

Procedure:

- 1) Groundwater samples were collected using a stainless steel bailer with stainless steel leader that was attached to cotton rope. The stainless steel leader was of sufficient length to eliminate contact of the cotton rope with the groundwater. Sterilized surgical gloves were worn during the sampling procedures.
- 2) The water samples were poured into the sample containers with teflon-lined screw caps. Careful procedures were used to ensure that no air remained in the septum vials. A sample label was prepared showing the sample number, sample location, date, time, and analysis to be conducted. A Chain-of-Custody control form was also prepared.
- 3) The sample bottles were placed in a storage cooler at 4°C (wet ice) for transport to the laboratory. All standard Chain-of-Custody control procedures were followed.

KHOV005788

- 4) Between sample collections, the bailer was scrubbed clean using an alconox and distilled water mixture. After scrubbing, the bailer was rinsed with the alconox/water mixture and then rinsed again with distilled water. Finally, the bailer was rinsed with acetone to remove any residual material, and then was air dried. A dedicated bailer for each area was used during the well purging and sampling.
- 5) Once the samples were placed in the containers and sealed with Teflon-lined screw caps, they were placed in a storage cooler maintained at 4°C for transfer to the J M Sarge, Inc. offices, where they were refrigerated until transfer to the laboratory.

KHOV005789

HAND AUGER BORING AND SAMPLE COLLECTION

Soil borings were made and samples collected from the all hand auger bore holes in the following manner:

Equipment:

- o Two, 4-inch O.D. stainless steel hand augers (AMS manufacture);
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon-lined screw caps;
- o Sample cooler/ice packs;
- o Bentonite pellets.

Procedure:

- 1) The surface area was cleared of debris by hand and a shallow hole dug (about 6 inches deep) with a hand trowel;
- 2) The auger was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger was scrubbed clean using analconox and distilled water mixture. After scrubbing, the auger was rinsed with thealconox/water mixture and then rinsed again with distilled water. The auger was rinsed with acetone to remove any residual materials, air dried, then given a final rinse with distilled water.
- 3) The soil materials encountered during the boring were logged by the geologist as they were brought to the surface;
- 4) A clean auger (the second) was used to collect the soil from the sample zone. The auger was advanced one foot and brought to the surface.

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- 5) The soil was removed from the auger. Only the interior portion (3 to 4 inches) of the soil was collected for later analysis. The top and the bottom of the sample was discarded. A portion of the sample was set aside for field analysis.
- 6) The soil sample for laboratory analyses was placed in a wide-mouth amber jar or septum vials with a teflon-lined screw cap. A sample label was prepared showing the sample number, depth of collection, date, an analysis was conducted. A Chain-Of-Custody control form was prepared.
- 7) The soil sample bottles were placed in a storage cooler at 4° C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples were refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis was decontaminated using the procedure detailed in Item 2 above.
- 9) At the completion of the boring, the bore hole was backfilled with bentonite.

KHOV005791

SURFACE SAMPLE COLLECTION PROCEDURE

Soil samples were collected from all sample locations in the following manner:

Equipment:

- o Two, 8-inch length stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon lined screw caps;
- o Sample cooler/ice packs;

Procedure:

- 1) The surface area was cleared of debris by hand and a shallow hole dug with a hand trowel;
- 2) The hand trowel was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the trowel was scrubbed clean using analconox and distilled water mixture. After scrubbing, the trowel was rinsed with thealconox/water mixture and then rinsed again with distilled water. The trowel was rinsed with acetone to remove any residual materials, air dried, then given a final rinse with distilled water;
- 3) The soil materials encountered during the sampling were logged by the geologist.

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- 4) The soil samples for laboratory analyses were placed in a wide-mouth amber jar or a septum vial with a teflon lined screw cap. A sample label was prepared showing the sample number, depth of collection, date, and analysis to be conducted. A Chain-of-Custody control form was prepared.
- 5) The soil sample bottles were placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples were refrigerated until transfer to the laboratory for analysis).

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WASTE CLASSIFICATION SOIL SAMPLING PROCEDURES

The following information details the Waste Classification Soil Sample Collection Procedures. These procedures represent methods utilized to ensure the validity of soil samples collected at the site.

The composite soil samples will be collected in the following manner:

Equipment:

- o Two, 4-inch O.D., stainless steel hand auger;
- o Two, stainless steel hand trowels;
- o 5-quart stainless steel mixing bowl;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (1 gallon);
- o Acetone (1 gallon);
- o Plastic spray bottle applicators;
- o Wide-mouth, amber glass jars with teflon-lined screw caps;
- o Sample cooler/ice packs

Procedure:

- 1) One (1) composite soil sample will be collected each 100 cubic yards of excavation spoils. Each composite sample will be made up of four (4) individual soil samples. The soil samples will be collected from different boring depths to attain the most accurate representation of the waste spoils.
- 2) The auger will be advanced to the desired sampling depths, and the auger controls will be placed into a stainless steel mixing bowl. Following the collection of four (4) soil samples, the contents within the bowl will be thoroughly emptied on a bench-kote paper and divided into quarters. Only one quarter will be placed into a sampling jar.

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- 3) Upon completion of the sampling for that particular drum, the auger will be scrubbed clean, using alconox and distilled water mixture. After scrubbing, the auger will be rinsed with a alconox/distilled water mixture and then rinsed again with distilled water. The auger will be rinsed with acetone to remove any residual materials, allowed to air dry, then given a final rinse of distilled water. The hand trowel and mixing bowl will also be decontaminated following the same procedures between sample collection.
- 4) The soil sample for laboratory analyses will be placed into a wide-mouth amber jar with a teflon-lined screw cap. A sample label will be prepared showing the sample number, date, and analysis to be conducted. A Chain-of-Custody Control form will also be prepared.
- 5) The soil sample bottles will be placed into a storage cooler at 4°C (ice packs) for transport to the J M Sarge, Inc. offices located in Somerville, NJ. The samples will be refrigerated until transferred to the laboratory for analysis.

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APPENDIX C
LABORATORY ANALYTICAL METHODOLOGIES

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Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in U.S. EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with U.S. EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by U.S. EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in U.S. EPA Method 608. Solid samples are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Petroleum Hydrocarbons:

Water samples are analyzed for total petroleum hydrocarbons by I.R. using U.S. EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with SW-846 Method 3540, as modified by the Draft "N.J. DEP ECRA Sampling Plan Guide", Attachment 2 page 9, and analyzed by U.S. EPA Method 418.1.

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Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P - Inductively Coupled Plasma Emission Spectroscopy (ICP)
- A - Flame Atomic Absorption
- F - Furnace Atomic Absorption
- CV - Manual Cold Vapor (Mercury)

Water analyses are performed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition).

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

Element	Water Test Method		Solid Test Method	
	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

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Cyanide:

Water samples are analyzed for cyanide using U.S. EPA Method 335.2. Cyanide is determined in solid samples as specified in the U.S. EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using U.S. EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the U.S. EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040
Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4
respectively for hydrogen cyanide
and hydrogen sulfide release.

EP Toxicity - Method 1310

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 16th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

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DATA REPORTING QUALIFIERS

- ND - The compound was not detected at the indicated concentration.
- J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.
- B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

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